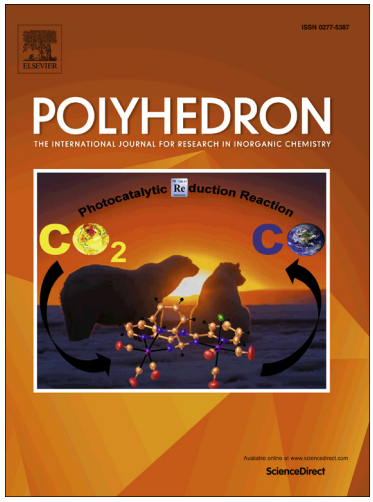

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A Series of Entangled Cd(II) Coordination Polymers Assembled from Different Dicarboxylate Acids and a Flexible Imidazole-based Ligand

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Abstract:

In order to tune the architectures of Cd(II)-bmimx coordination polymers (bmimx = 1,4-bis(2-methylimidazol-1-ylmethyl)-2,3,5,6-tetramethylbenzene), four dicarboxylate ligands, succinic acid (H_2suc), 1,4-benzenedicarboxylic acid (H_2bdc), 4,4'-sulfonyldibenzoic acid (H_2sdba) and 4,4'-carbonyldibenzoic acid (H_2cba), have been employed as co-ligands, and four new coordination polymers with different entangled modes, namely $\{[Cd(bmimx)(suc)]\cdot 2H_2O\}_n$ (**1**), $[Cd(bmimx)(bdc)(H_2O)]_n$ (**2**), $[Cd(bmimx)(sdba)]_n$ (**3**) and $\{[Cd(bmimx)(cba)]\cdot 8H_2O\}_n$ (**4**), have been synthesized and characterized. Complexes **1** and **2** show the **dia** topology with the 4- and 5-fold interpenetrating modes, respectively. Complexes **3** and **4** exhibit different 2D + 2D→3D polycatenated networks *via* Hopf links, respectively. A comparison of these structures reveals that the backbones of the dicarboxylate ligands play important roles in controlling the entangled modes of the coordination polymers. Furthermore, the thermal stabilities and the photoluminescence of **1**-**4** have also been investigated.

Keywords: entangled coordination polymers; dicarboxylate acids; flexible imidazole-based ligands; photoluminescent properties

1. Introduction

Entangled networks have been attracting enormous interest over recent decades, not only owing to their intriguing properties and potential applications as functional materials, but also due to their fascinating topological structures.[1-4] As important members in the realm of

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